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E. H. WHITTAKER

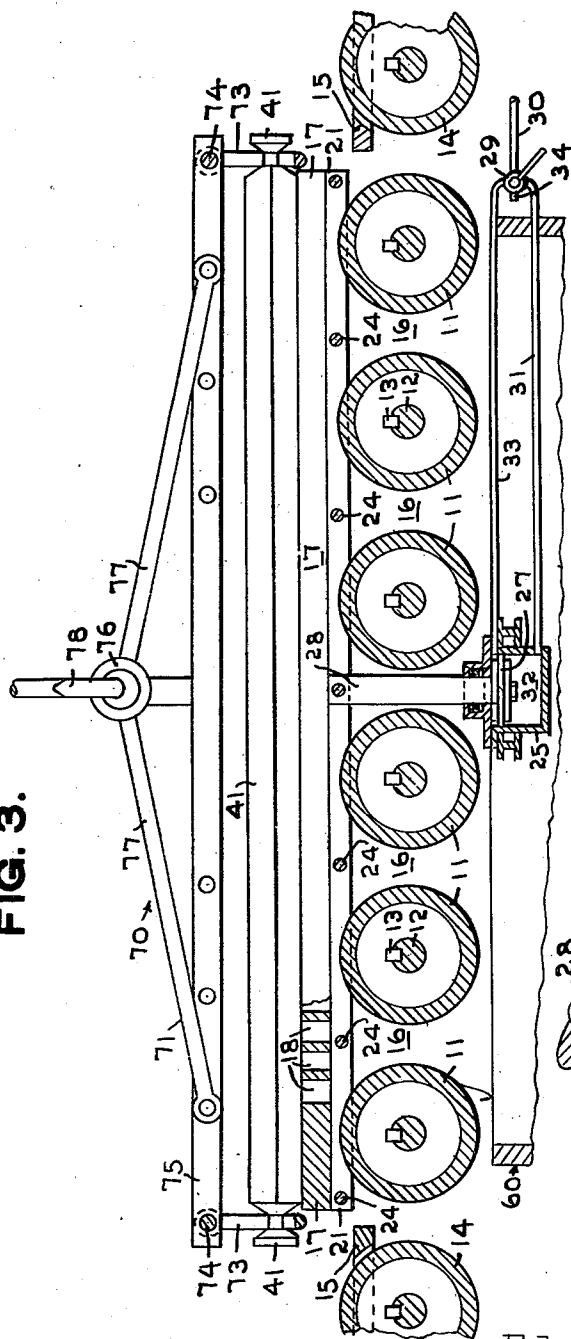
2,341,584

SHAKE-OUT STATION

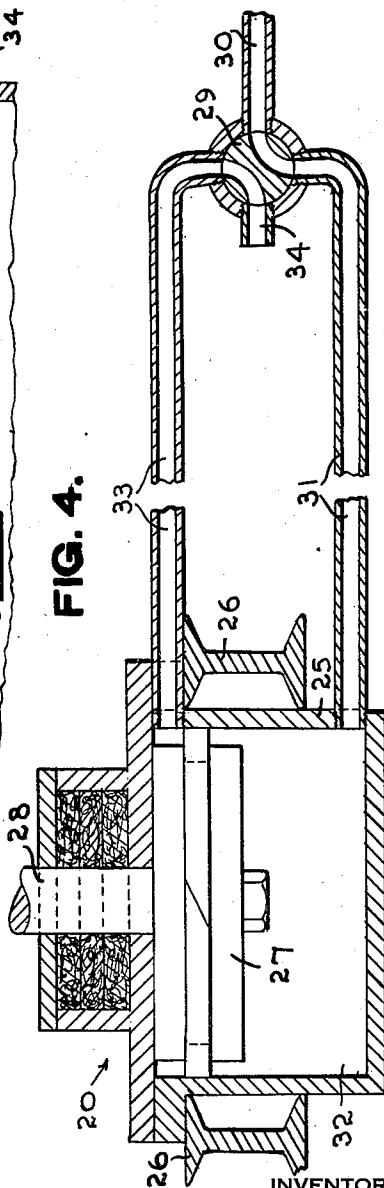
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4. Fig.



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SHAKEOUT STATION

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Original application July 9, 1941, Serial No. 401,651. Divided and this application October 24, 1942, Serial No. 463,230

7 Claims. (Cl. 22—89)

This invention relates to shake-out stations or apparatus for foundry plants, and this application is a division of an application for United States patent on Foundry plants, filed by me July 9, 1941, Serial Number 401,651.

The principal object of the invention is to provide a shake-out apparatus to impart a straight up-and-down movement to horizontally-disposed flask sections so as to dislodge molds and sand therefrom and cause the material to drop straight downwardly.

Another object is to provide an apparatus which will cause the molds to collapse and be broken up into relatively small pieces, freeing sand, so that the latter may be reconditioned and retempered for reuse.

Still another object is to provide a shake-out station provided with a roller bed for a grizzly, upon which the grizzly may be rolled, the roller bed supporting the grizzly a portion of the time during the shake-out and until it may be rolled off. Thus the grizzly is not actually attached to the shake-out mechanism, and may be rolled off for repairs to it or to the mechanism which is normally below the grizzly.

Other objects and advantages of the invention will appear in the following detailed description of the preferred embodiment of the invention, taken in connection with the accompanying drawings forming a part of this specification and in which drawings:

Figure 1 is a view mostly in side elevation of the novel shake-out station, with portions of a crane, and a sand reconditioning apparatus below the shake-out station.

Figure 2 is a vertical sectional view through the shake-out station with the shaking means in one position.

Figure 3 is a view, similar to Figure 2 but with the shaking means in another position.

Figure 4 is a vertical sectional view of a valve and a portion of the shaking means of the station.

The novel shake-out station includes a bed such as the roller bed 10, comprising a plurality of freely rotatable spaced apart, like rollers or supports 11 having their axes parallel, and rotatable with shafts 12 to which the rollers may be keyed, as at 13, and the shafts may be carried by suitable bearings in standards of any approved design.

There is no floor above nor directly below the rollers 11, but there may be provided spaced apart rollers 14, similar to rollers 11, with their axes paralleling the axes of the rollers 11, at either end

of the roller bed 10, and between these rollers 14 at either end thereof may be floor panels 15.

The free spaces 16 between rollers 11 are provided so that sand, broken castings, trash, etc., shaken from flasks above the roller bed 10 will drop through the spaces 16 between the rollers 11.

Upon the roller bed 10 may be rolled, over the rollers 14, a grille or grizzly 17, comprising a perforated metallic plate (or a tray if several small castings are made in the mold), the perforations 18 permitting sand or trash to drop through the grizzly 17.

Vibrating or shaking means 20 for the grizzly 17 includes a head or grille 21 which may be quickly raised and lowered by a fluid-operated hammer 22. The head is, in the example shown, made up of bar and rod material 23 and 24 respectively to form a frame and a grating or grille through which sand and trash will fall readily; the bars 23 being adapted to engage the under side of the grizzly 17 during the upward strokes of the hammer 22. This head normally extends about the upper portions of the rollers or supports 11, with the bars 23 parallel and spaced from the ends of the rollers 11 and the rods 24 extending from bar to bar and between the upper portions of the rollers 11, through the spaces 16. However, the head 21 is not a screening means and does not function as a screen for sand, etc.

The hammer is disposed mainly below the roller bed and may include a cylinder 25 supported on cross beams 26, a piston 27 in the cylinder 25 and a vertically reciprocating piston rod or member 28, connecting the piston 27 and head 21 in any approved way, and extending between two of the rollers 11.

The piston 27 may be actuated by oscillations of valve 29, similar to the valve shown in Figure 4, which has a pipe 30 leading to a source of fluid under pressure, a pipe 31 leading from the valve 29 to the lower portion of the chamber 32 of the cylinder 25, and a pipe 33, leading from the valve 29 to the upper portion of the chamber 32. There is also provided an exhaust port 34 for the valve 29. By manipulation of valve 29, the grating-carrying head 21 may be caused to rise quickly and a single blow upon the grizzly 17 may be sufficient to cause a mold 40 in a flask portion 41 (the drag portion of a flask is shown by way of example) inverted upon the grille 17, to collapse and break up into small pieces. Several strokes of the piston 27, carrying the grille-like head 21 upwardly against the under side of the grizzly 17, may be necessary in order to break out all of the mold 40 and shake the flask portion 41

free of sand, etc. The vibrating means 20 is adapted to raise the grizzly 17 and head 21 above the uppermost surfaces of the rollers 11, as in Figure 3, and to lower the grizzly 17 to the upper surfaces of the rollers 11 and the head to its normal position, as in Figures 1 and 2.

Directly below the shake-out station may be a sand reconditioning and retempering apparatus 60.

The flask portions, such as 41, may be moved to and deposited upon the grizzly or grille 17, by a suitable crane 70, including a grapple or bail 71 provided with a horizontal beam 72 carrying eyes 73, as by pins 74, adjacent its ends 75, for engagement with the trunnions of flask portions. There may be, also, a central eye 76, carried by a sling 77 supporting the grapple 71, which eye 76 may be engaged by the crane hook 78.

This shake-out station imparts a vertical movement to the grizzly and, of course, the flask section; a jar when the head 21 contacts the grizzly or grille 17, and a second jar when the grizzly contacts the rollers 11, upon descent of the head 21. There is no rotative movement of the grizzly during the shake-out which movement would be apt to fling sand about, but jarring of the flask section is found to dislodge the mold and sand from the flask section so that the material will drop straight downwardly.

I claim:

1. In a shake-out station of a foundry plant, a roller bed including a plurality of freely rotatable, spaced-apart, like rollers, having their axes parallel; a horizontally-disposed grille extending about the upper portions of said rollers and normally below the uppermost surfaces thereof; and means mainly below said roller bed for moving said grille upwardly to a plane with the upper face of said grille above the uppermost surfaces of said rollers and downwardly to the normal position of said grille.

2. In a shake-out station of a foundry plant, a roller bed including a plurality of freely rotatable, spaced-apart, like rollers, having their axes parallel; a horizontally-disposed grille extending about the upper portions of said rollers and normally below the uppermost surfaces thereof; including a pair of paralleling bars disposed normal to the axes of said rollers, and rods connecting said bars and normally disposed between adjacent rollers, with their longitudinal axes paralleling the axes of said rollers, and means mainly below said roller bed for moving said grille upwardly to a plane with the upper face of said grille above the uppermost surfaces of said rollers and downwardly to the normal position of said grille.

3. In a shake-out station of a foundry plant, a roller bed including a plurality of freely rotatable, spaced-apart, like rollers, having their axes parallel; a horizontally-disposed grille ex-

tending about the upper portions of said rollers and normally below the uppermost surfaces thereof; and means mainly below said roller bed for moving said grille upwardly to a plane with the upper face of said grille above the uppermost surfaces of said rollers and downwardly to the normal position of said grille, said means including a hammer provided with a vertically reciprocating member, operatively connected with the under side of said grille and with said member extending upwardly between two of said rollers.

4. In a foundry plant shake-out apparatus, a bed including a plurality of spaced-apart paralleling, like supports, horizontally disposed; a horizontally-disposed grille extending about the upper portions of said supports and normally below the uppermost surfaces thereof, and means, mainly below said bed, for moving said grille upwardly, to a plane with the upper face of said grille above the uppermost surfaces of said supports, and downwardly to the normal position of said grille.

5. In a foundry plant shake-out station, a roller bed including a plurality of freely rotatable, spaced-apart, like rollers, having their axes parallel; a grizzly upon said rollers; a horizontally-disposed head including bars and rods extending about the upper portions of said rollers, said head being underneath said grizzly and normally out of contact therewith; and means for moving said head upwardly to jar said grizzly, and downwardly to the normal position of said head.

6. In a foundry plant shake-out station, a roller bed including a plurality of freely rotatable, spaced-apart, like rollers, having their axes parallel; a grizzly upon said rollers; a horizontally-disposed head including bars and rods extending about the upper portions of said rollers, said head being underneath said grizzly and normally out of contact therewith; and means for moving said head upwardly to jar said grizzly, and downwardly to the normal position of said head, said means being disposed mainly below said roller bed.

7. In a foundry plant shake-out station, a roller bed including a plurality of freely rotatable, spaced-apart, like rollers, having their axes parallel; a grizzly upon said rollers; a horizontally-disposed head including bars and rods extending about the upper portions of said rollers, said head being underneath said grizzly and normally out of contact therewith; and means for moving said head upwardly to jar said grizzly, and downwardly to the normal position of said head, said means being disposed mainly below said roller bed, and including a cylinder, a piston in said cylinder, a vertically reciprocating piston rod connecting the piston and said head and extending between two of said rollers, and actuating means for said piston.

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